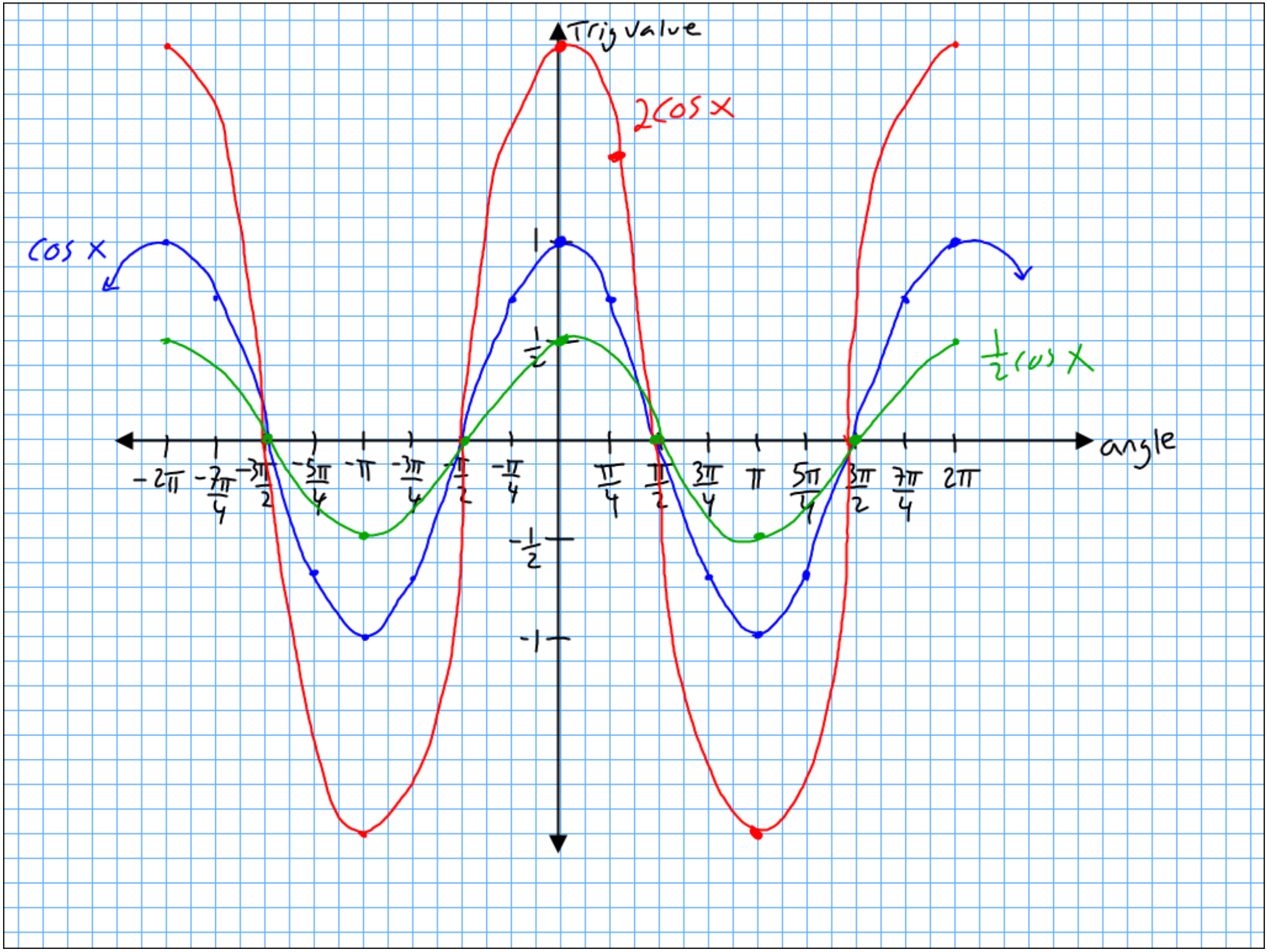
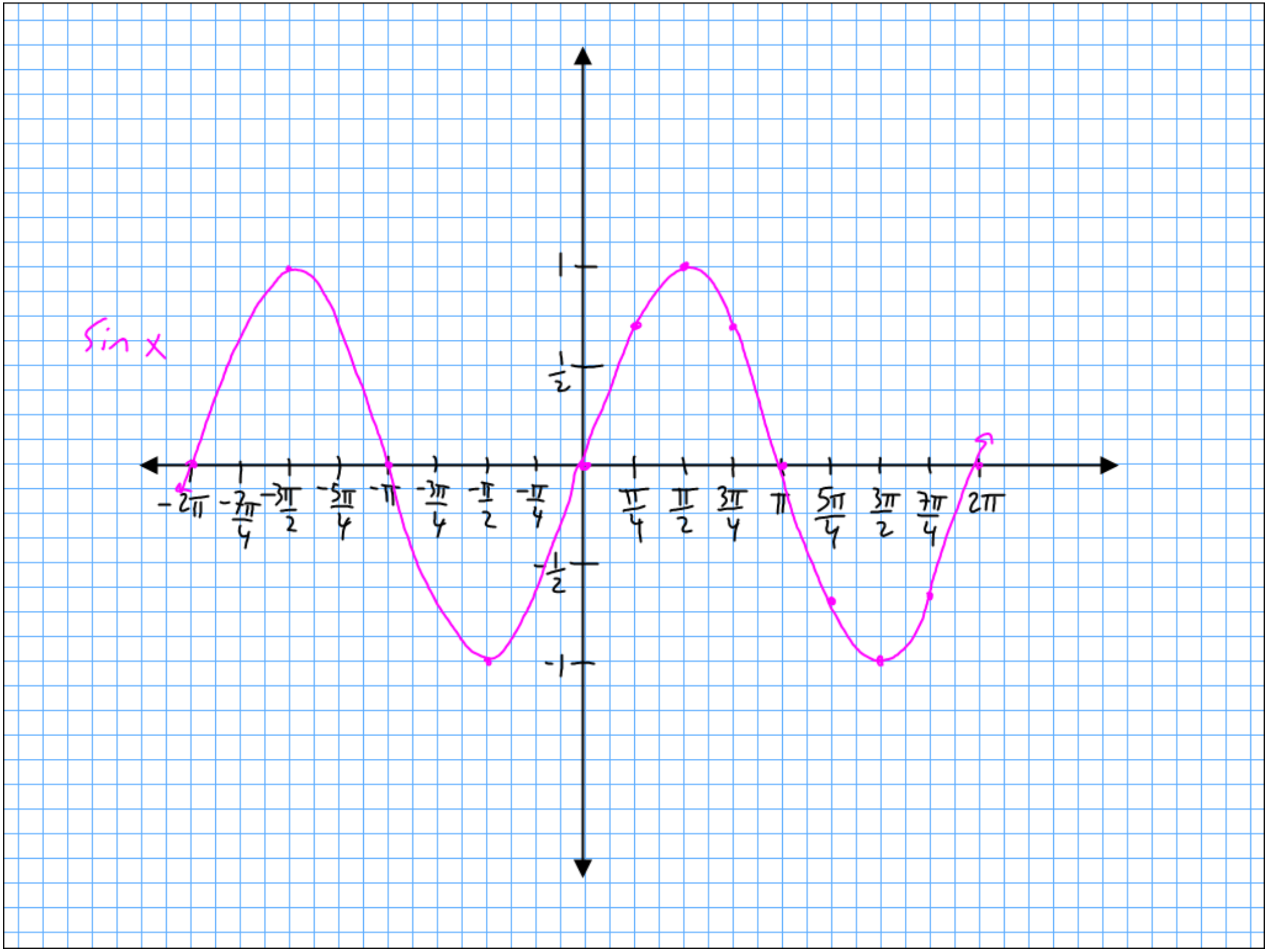
x	$\cos x$
$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$
$\frac{\pi}{2}$	0
$\frac{3\pi}{4}$	
π	
$\frac{5\pi}{4}$	
$\frac{3\pi}{2}$	
$\frac{7\pi}{4}$	
2π	

and neg.

x	$\sin x$
$\frac{\pi}{4}$	
$\frac{\pi}{2}$	
$\frac{3\pi}{4}$	
π	
$\frac{5\pi}{4}$	
$\frac{3\pi}{2}$	
$\frac{7\pi}{4}$	
2π	

and neg.


Trig value
2cos x
cos x
$\frac{1}{2}\cos x$
angle
1
$\frac{1}{2}$
$-\frac{1}{2}$
-1
-2π
$-\frac{7\pi}{4}$
$-\frac{3\pi}{2}$
$-\frac{5\pi}{4}$
$-\pi$
$-\frac{3\pi}{4}$
$-\frac{\pi}{2}$
$-\frac{\pi}{4}$
$\frac{\pi}{4}$
$\frac{\pi}{2}$
$\frac{3\pi}{4}$
π
$\frac{5\pi}{4}$
$\frac{3\pi}{2}$
$\frac{7\pi}{4}$
2π

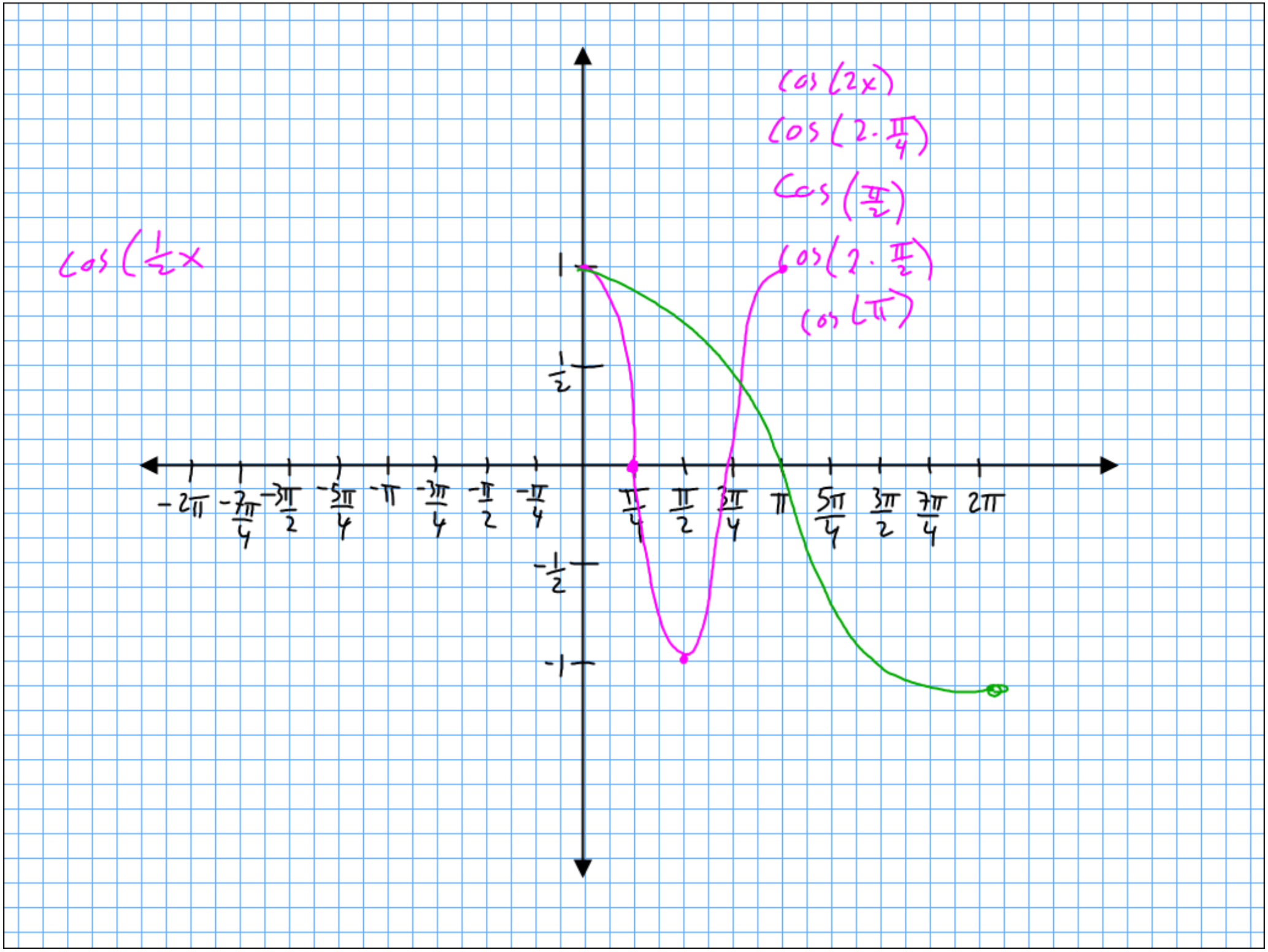

sin x
1
1/2
-1/2
-1
-2π
-7π/4
-3π/2
-5π/4
-π
-3π/4
-π/2
-π/4
π/4
π/2
3π/4
π
5π/4
3π/2
7π/4
2π

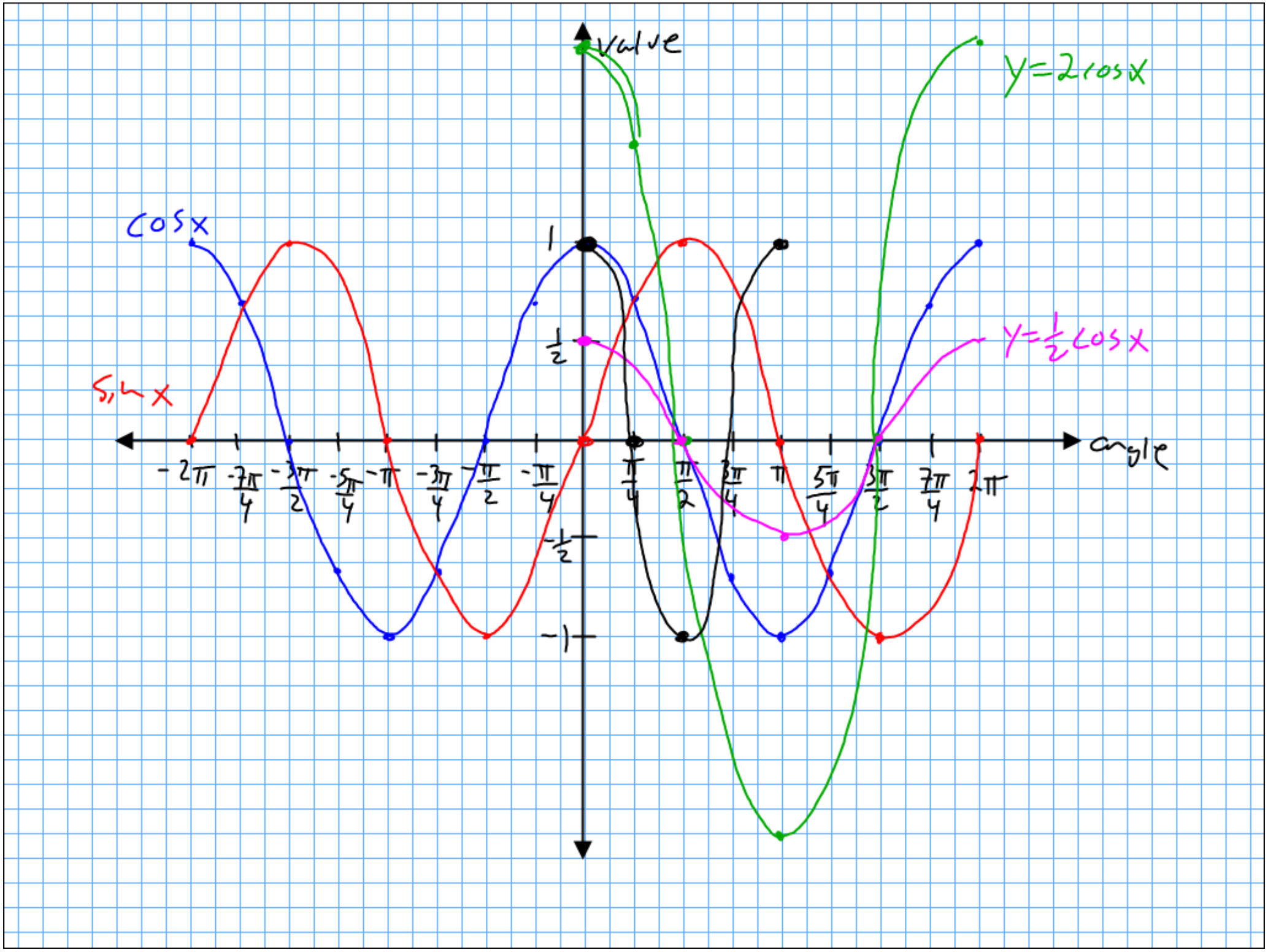
$y = 2\cos x$ ← Stretch by 2 vertically → $y = 2\sin x$

$y = \frac{1}{2}\cos x$ ← compress vertically to $\frac{1}{2}$ the height → $y = \frac{1}{2}\sin x$

$y = \cos(2x)$ ← horizontal compression → $y = \sin(2x)$

$y = \cos\left(\frac{1}{2}x\right)$ ← Horz. Stretch → $y = \sin\left(\frac{1}{2}\right)$


cos(2x)
cos(2·π/4)
cos(π/2)
cos(2·π/2)
cos(π)
cos(1/2 x
1
1/2
-1/2
-1
-2π
-7π/4
-3π/2
-5π/4
-π
-3π/4
-π/2
-π/4
π/4
π/2
3π/4
π
5π/4
3π/2
7π/4
2π


value
angle
cos x
sin x
y = 2 cos x
y = ½ cos x
1
½
-½
-1
-2π
-7π/4
-3π/2
-5π/4
-π
-3π/4
-π/2
-π/4
π/4
π/2
3π/4
π
5π/4
3π/2
7π/4
2π

$y = a \sin bx$

$y = a \cos bx$

$P = \frac{2\pi}{b}$

$b = \frac{2\pi}{P}$

example

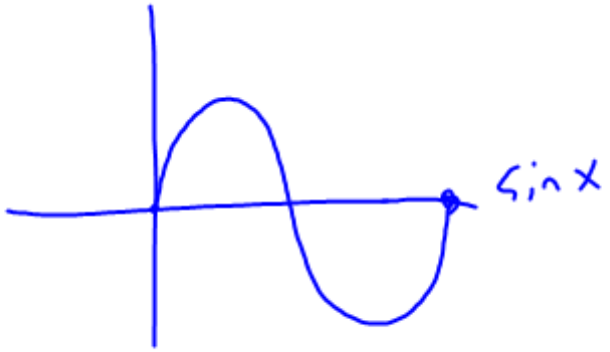
$P = \frac{2\pi}{2} = \pi$

$P = \frac{2\pi}{\frac{1}{2}} = 4\pi$

a = vertical stretch or compression → amplitude (always pos.)

b = horizontal stretch or compression → frequency

Period = 1 complete cycle



Sect. 4.1 #1, 2, 4, 6, 7, 9, 12, 16-23